Back

FURUNO

OPERATOR'S MANUAL

MULTI-PURPOSE LCD DISPLAY

MODEL MU-150C

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

PRINTED IN JAPAN

⚠ SAFETY INSTRUCTIONS

Safety Instructions for the Operator

⚠ WARNING

Do not open the equipment.

Only qualified personnel should work inside the equipment.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Use the proper fuse.

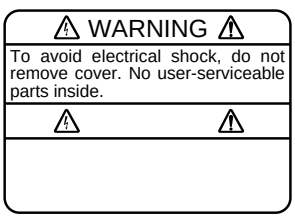
Fuse rating is shown on the equipment. Use of a wrong fuse can result in damage to the equipment.

Immediately turn off the power at the switchboard if the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.

⚠ CAUTION

A warning label is attached to the equipment. Do not remove the label. If the label is missing or damaged, contact a FURUNO agent or dealer.



Name: Warning Label (2)
Type: 03-129-1001
Code No.: 100-236-741

About the TFT LCD

The TFT LCD is constructed using the latest LCD techniques, and displays 99.99% of its pixels. The remaining 0.015% of the pixels may drop out or blink, however this is not an indication of malfunction.

Safety Instructions for the Installer

⚠ WARNING

Do not open the cover unless totally familiar with electrical circuits and service manual.

Improper handling can result in electrical shock.

Turn off the power at the switchboard before beginning the installation.

Fire or electrical shock can result if the power is left on.

Do not install the equipment where it may get wet from rain or water splash.

Water in the equipment can result in fire, electrical shock or damage to the equipment.

⚠ CAUTION

Ground the equipment to prevent mutual interference.

Observe the following compass safe distances to prevent interference to a magnetic compass:

	Standard compass	Steering compass
MU-200C	1.55 m	1.05m

Locate the MU-150C out of direct sunlight for optimum viewing.

When lifting the display unit, hold it together with the cover.

Grasping by the cover alone may allow the display unit to fall, resulting in possible injury or damage to the equipment.

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FOREWORD

A Word to the Owner of the MU-150C

FURUNO Electric Company thanks you for purchasing the MU-150C 15” Multi-Purpose LCD Display. We are confident you will discover why the FURUNO name has become synonymous with quality and reliability.

For over 50 years FURUNO Electric Company has enjoyed an enviable reputation for quality and reliability throughout the world. This dedication to excellence is furthered by our extensive global network of agents and dealers.

Your equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless properly installed and maintained. Please carefully read and follow the operation, installation and maintenance procedures set forth in this manual.

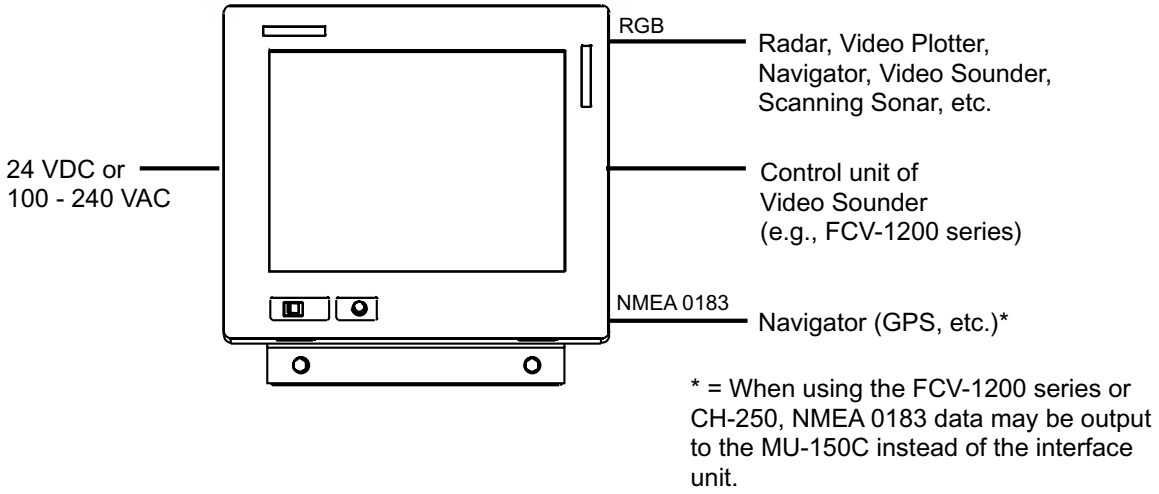
We would appreciate feedback from you, the end-user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO.

Features

- Main or remote display for radars, video sounders, sonars. Compatible equipment: FR-1505 MK3 series, FR-1760DS, FCV-1200 series, FCV-1500 series, CH-250, CH-37, CSH-23/73/83, GD/GP-280/380/680, etc.
- High resolution display of 1024 x 768 dot (XGA), 640 x 480 dot (VGA)
- Brightness of 180 cd/m^2 (typical) and minimum 150 cd/m^2 for comfortable viewing day and night
- Landscape or portrait orientation
- Wide viewing angle of 160° for observation by more than one person

SYSTEM CONFIGURATION


RGB
Radar, Video Plotter,
Navigator, Video Sounder,
Scanning Sonar, etc.
24 VDC or
100 - 240 VAC
Control unit of
Video Sounder
(e.g., FCV-1200 series)
NMEA 0183
Navigator (GPS, etc.)*
* = When using the FCV-1200 series or CH-250, NMEA 0183 data may be output to the MU-150C instead of the interface unit.

Connectable equipment

Equipment	MU-150C Display Unit Type	
	Landscape	Portrait*
FR-1500 MK3 series	Yes	No
FCV-1200 series	Yes	Yes (Modification required)
FCV-1500 series	No	Yes (Modification required)
GD/GP-280/380/680	Yes	No
CH-250	Yes	No
CH-37	No	Yes (Modification required)
CSH-23/73/83	No	Yes
FR-1760DS	No	Yes (Modification required)

* = Display cannot be viewed with polarized sunglasses.

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Display Unit	MU-150C	–	1	AC specification
				DC specification
Spare Parts *	SP10-02801	001-414-460	1 set	For DC
	SP10-02802	001-414-970		For AC
Installation Materials *	CP10-04910	001-414-690	1 set	For AC (CP10-04901)
	CP10-04920	001-414-700		For DC (CP10-04902)
Accessories *	FP10-02501	001-414-490	1 set	
	FP10-05401	001-402-540	1	For FCV-1500L
Bracket *	FP10-02510	001-414-510	1	Including FP10-02511

Option

Name	Type	Code No.	Qty	Remarks
Bracket *	FP10-02510	001-414-510	1	Including FP10-02511
Hood (Landscape)	FP10-02502	001-414-730	1	
Hood (Portrait)	FP10-02503	001-414-750	1	

* = See packing list at end of manual.

1 MOUNTING

Refer to the outline drawing at the end of the manual for mounting dimensions.

Note: The LCD is made of glass. Handle it with care.

1.1 Display Unit

The display unit may be flush mounted in a panel or on a desktop, using the optional bracket. Display tilt can be chosen from 9° or 20°, by the location of the mounting plate.

When selecting a mounting location, keep in mind the following points:

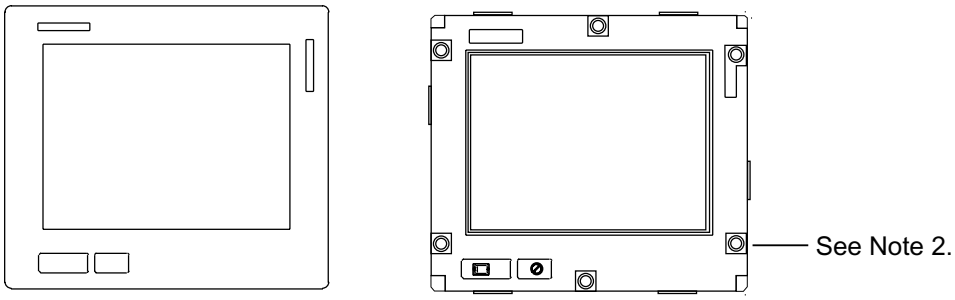
- Locate the unit out of direct sunlight.
- Select a location where the display can be easily viewed and the controls can be easily operated.
- Leave sufficient space around the unit for servicing and maintenance. See the outline drawing for recommended servicing space.
- The unit weighs 35.3 lbs (16 kg). Be sure the mounting location is strong enough to support the weight of the unit.
- Locate the unit away from areas subject to water splash and rain.

Flush mounting

See the outline drawing at the end of the manual for mounting dimensions.

⚠ CAUTION
Hold the cover and display unit together when lifting the display unit. The display unit may fall if only the cover is held.

1. Using the paper template supplied in the installation materials, make a cutout in the mounting location. (Modification of the LCD may be necessary depending on equipment used. See “Modification for Switching from Landscape to Portrait Orientation” in the Appendix for details.)
2. Pull the display unit cover toward you to detach it.

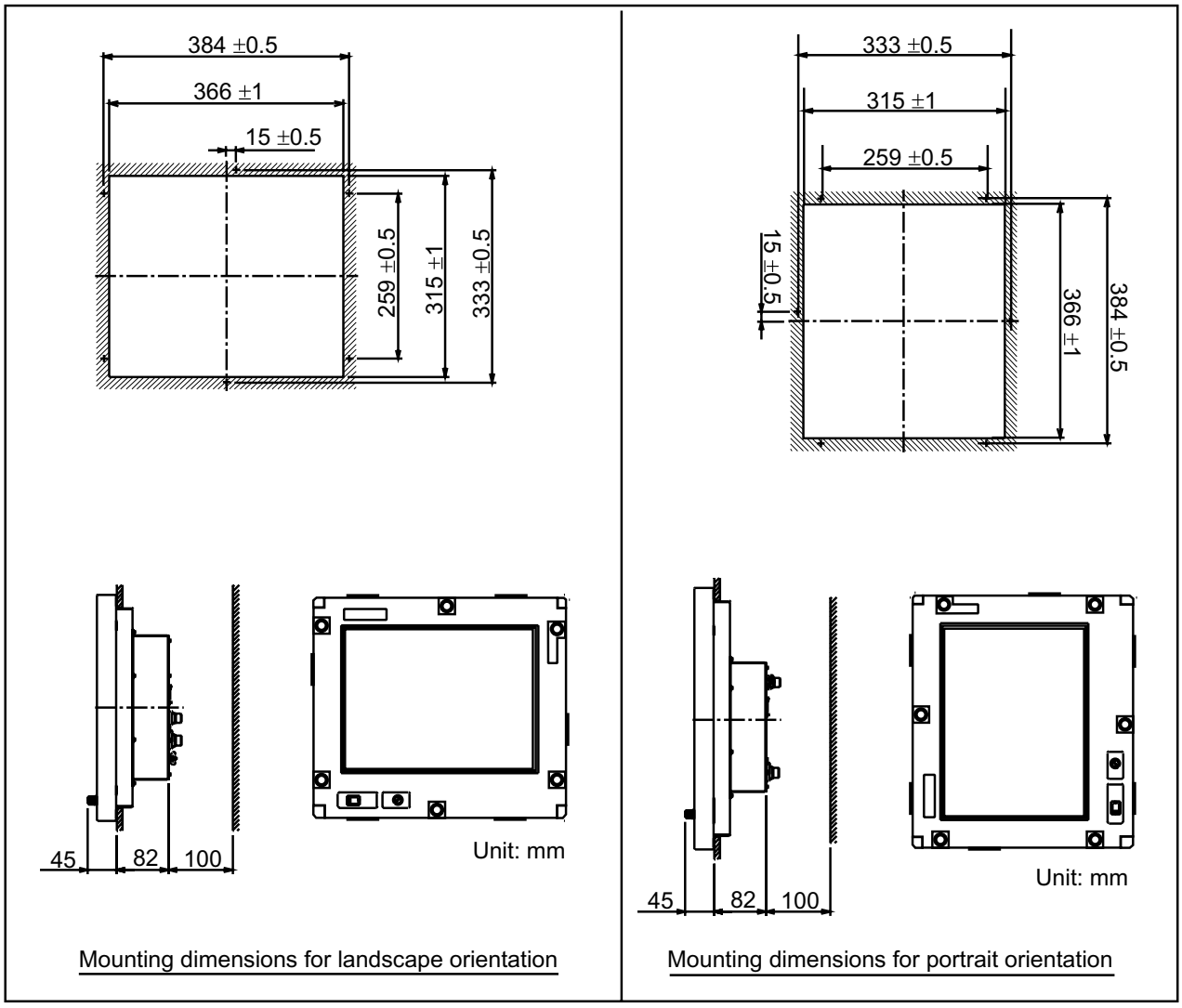


Display unit and cover

3. Fasten the display unit to the mounting location with six tapping screws (5X30).

   Note 1: Hex head bolts may also be used to fasten the display unit. However, their length must be at least 30 mm.

   Note 2: Use M5 bolt or tapping screw (nominal diameter: M5), although the size of the mounting holes in the display unit is M8.



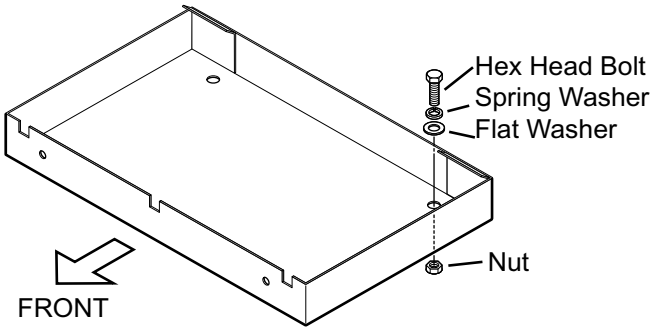
Mounting dimensions

4. Reattach the cover.
5. For the portrait model only, attach the FURUNO logo seal (supplied in the accessories) at the top left corner. Remove the logo seal from the bottom left corner.

Desktop mounting

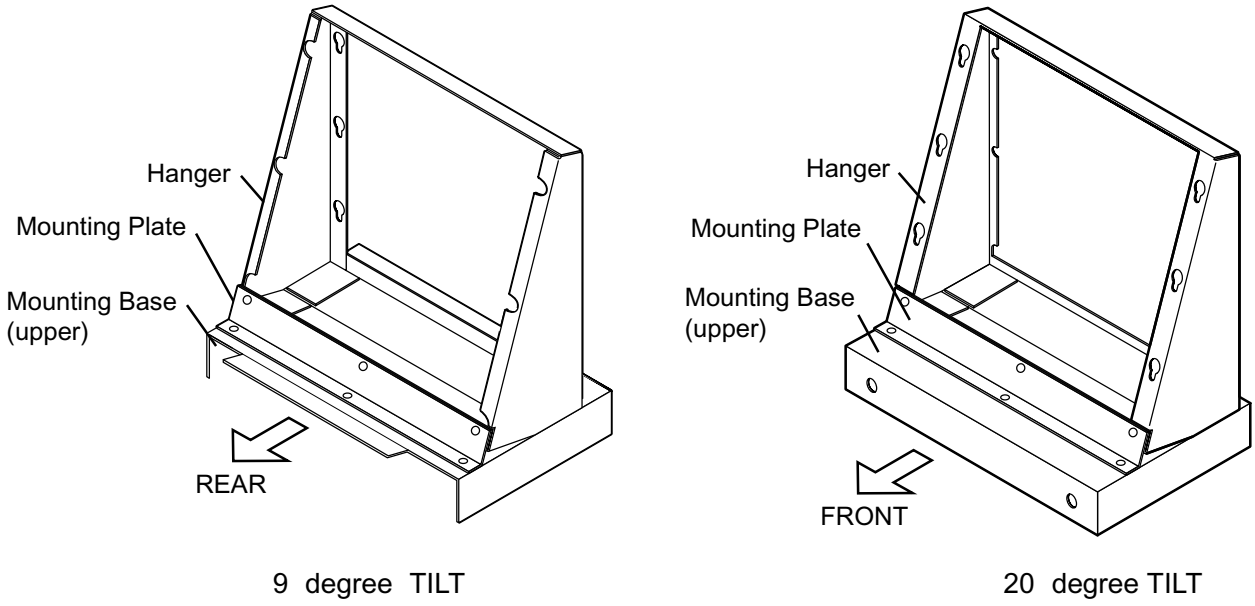
The display unit can be mounted on a desktop, using the optional bracket (Type: FP10-02510, Code No.: 001-414-510).

1. Fasten the mounting base (lower) to the mounting location with four sets of hex head bolts, spring washers, flat washers and nuts.



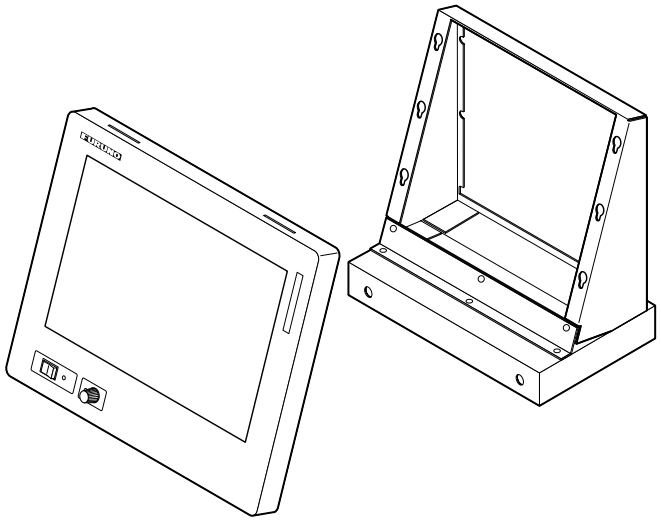
Mounting base (lower)

2. Fasten the bracket and mounting plate to the mounting base (upper) with 12 hex head bolts. Fasten the mounting plate at the rear for 9° tilt, or at the front for 20° tilt.



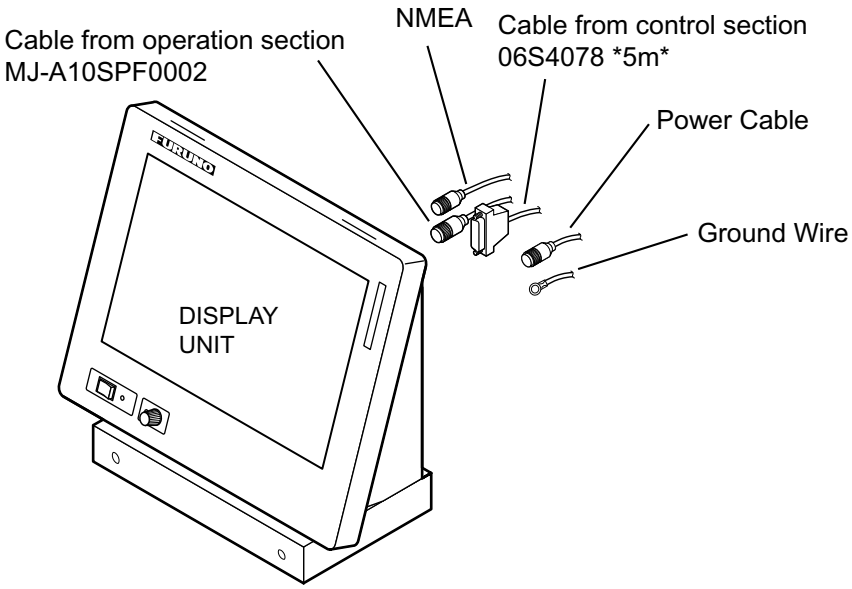
Fastening bracket and mounting plate to mounting base (upper)

3. Loosely screw six screws (M5X15) into the holes at the rear of the display unit. Set the screws on the display unit to the holes on the bracket and then tighten the screws. (Note that the display unit may also be mounted in portrait orientation.)



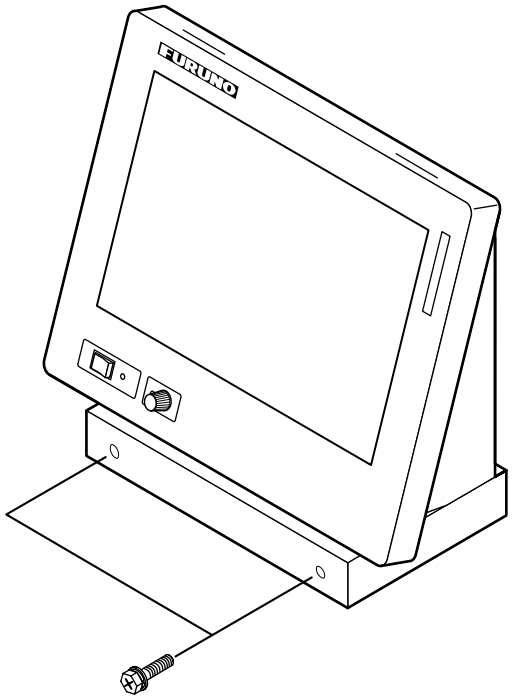
Fastening the front panel

4. Fasten the power cable (local supply in case of AC power), cable from the control and operation sections of external equipment and ground wire (local supply) at the rear of the MU-150C. For use of the cable type 06S4078 (from a control section), cut off the connector's rubber cover and remove the fixing metal to enable connection.



Connection of cables at the rear of the display unit

5. Grease the two hex head bolts for fastening the display unit to the mounting base (lower).
6. Fasten the display unit to the mounting base (lower) with the two hex head bolts greased at step 5.



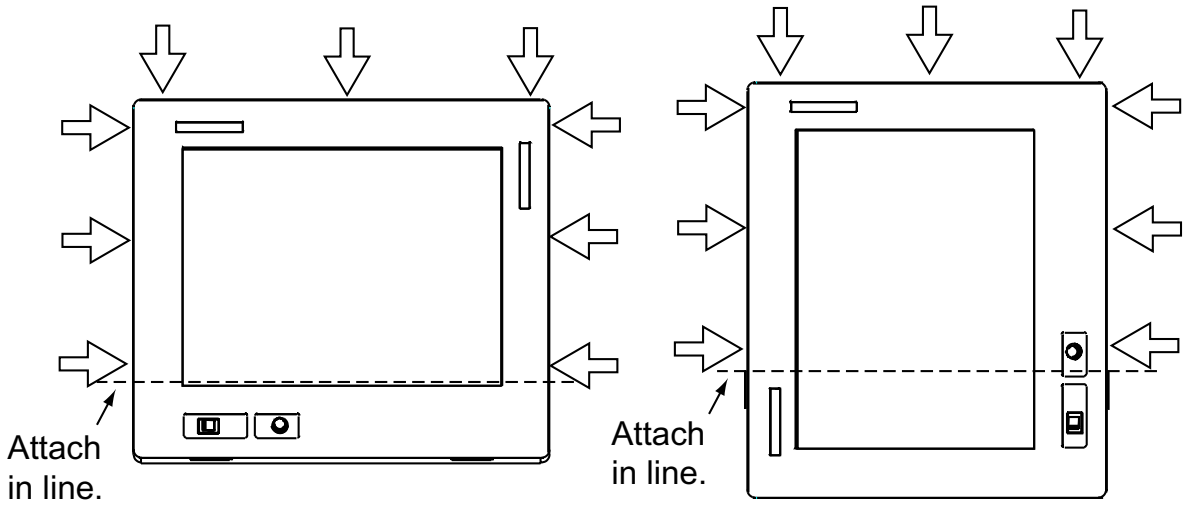
Fastening the mounting base (lower) to the display unit

7. For portrait orientation, attach logo (supplied) at upper left hand corner.

1.1.1 Hood (option)

A hood (portrait or landscape) is optionally available. Attach it to the display unit with Velcro tape as shown below.

1. Attach nine sets of Velcro tape to the display unit at the locations shown below, in as straight as possible.



Display unit, how to attach Velcro tapes

2. Attach the hood to the display unit.

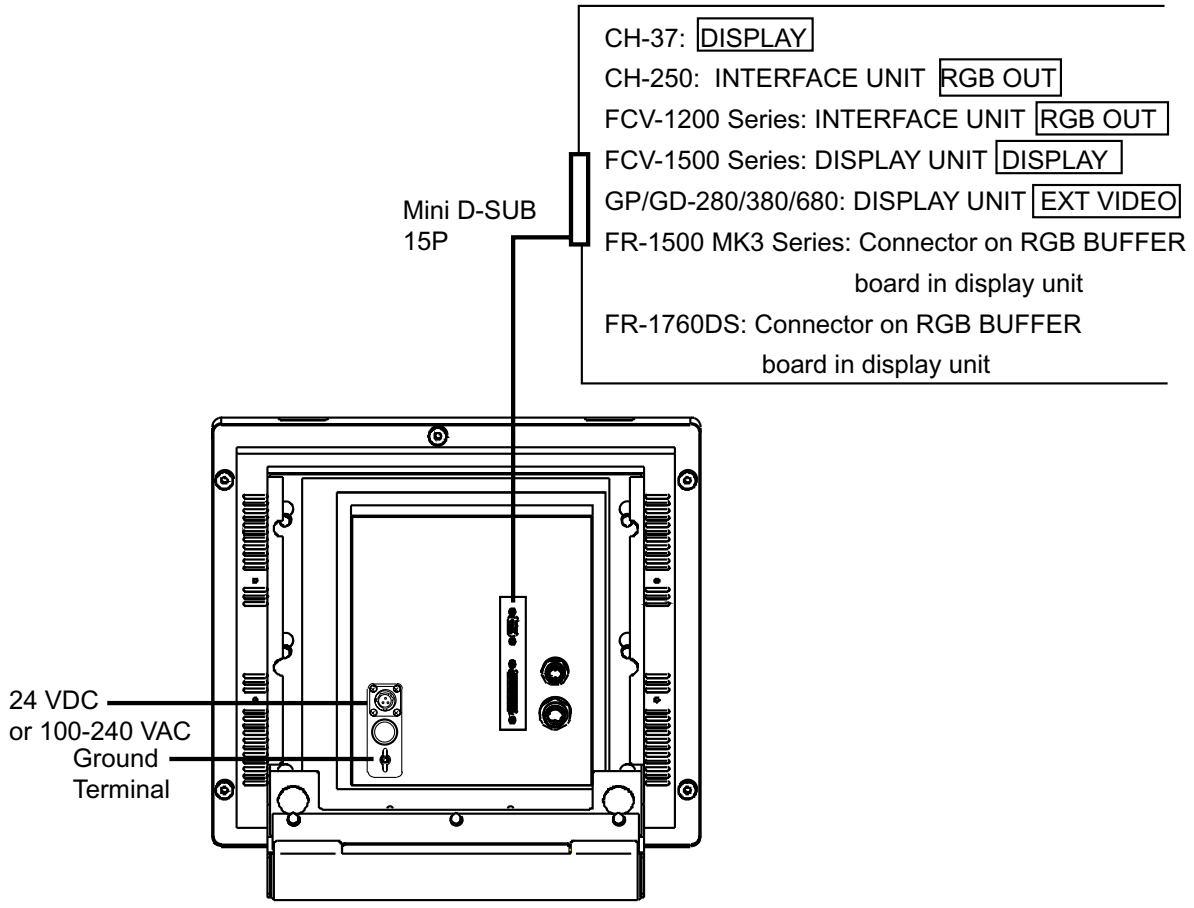
2 WIRING

2.1 Wiring External Equipment

Connect external equipment to the MU-150C by referring to the drawings in this section. A cable with connector at both ends is provided to connect equipment.

General-purpose monitor

To use the MU-150C as a general-purpose monitor, connect equipment with a mini D-SUB 15P connector. In this case do not connect a navigator to the NMEA port. Nav data is output through the D-SUB 25P connector.

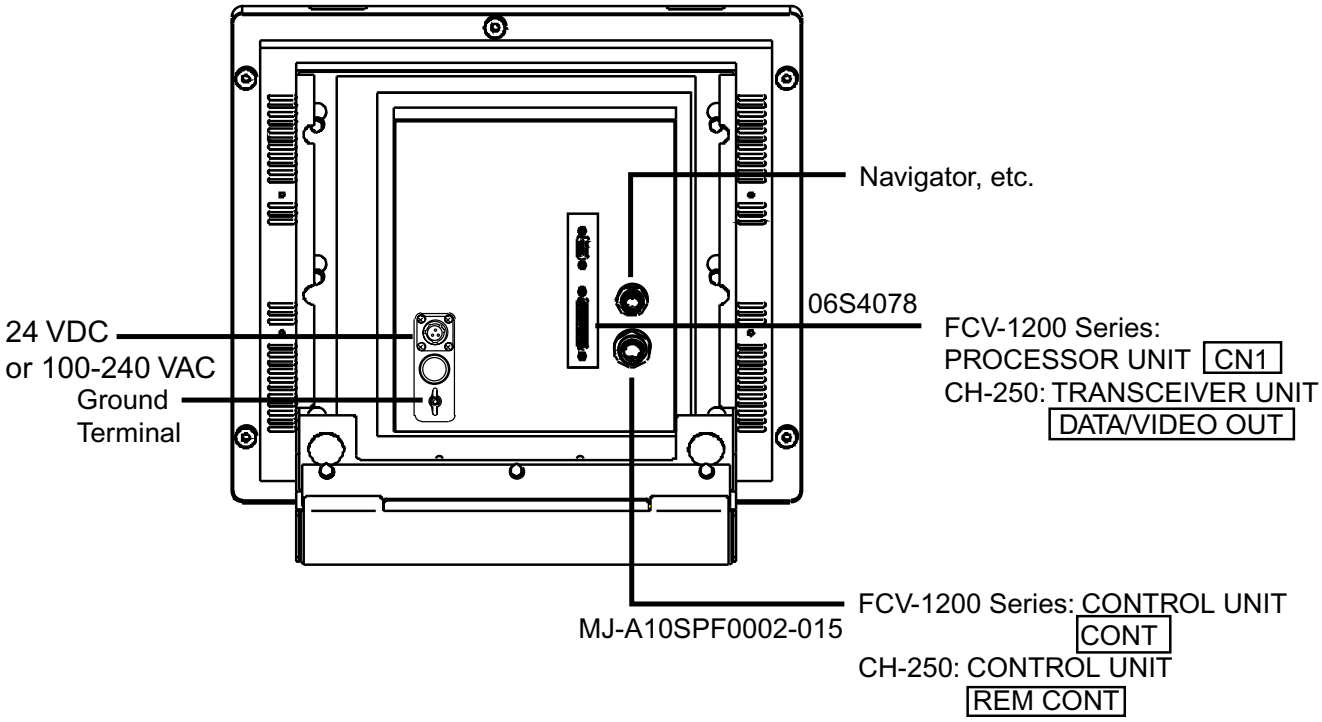

CH-37: DISPLAY
CH-250: INTERFACE UNIT RGB OUT
FCV-1200 Series: INTERFACE UNIT RGB OUT
FCV-1500 Series: DISPLAY UNIT DISPLAY
GP/GD-280/380/680: DISPLAY UNIT EXT VIDEO
FR-1500 MK3 Series: Connector on RGB BUFFER board in display unit
FR-1760DS: Connector on RGB BUFFER board in display unit
Mini D-SUB 15P
24 VDC or 100-240 VAC
Ground Terminal

Display unit, rear view, wiring using general-purpose cables

Note: When connecting a general-purpose monitor, use the following cable or the equivalent:
Mini D-sub 15P: EVNPS05-50 ft, male-male, (max. 15 m)
Manufacturer: BlackBox Japan

Connecting FCV-1200 series and CH-250

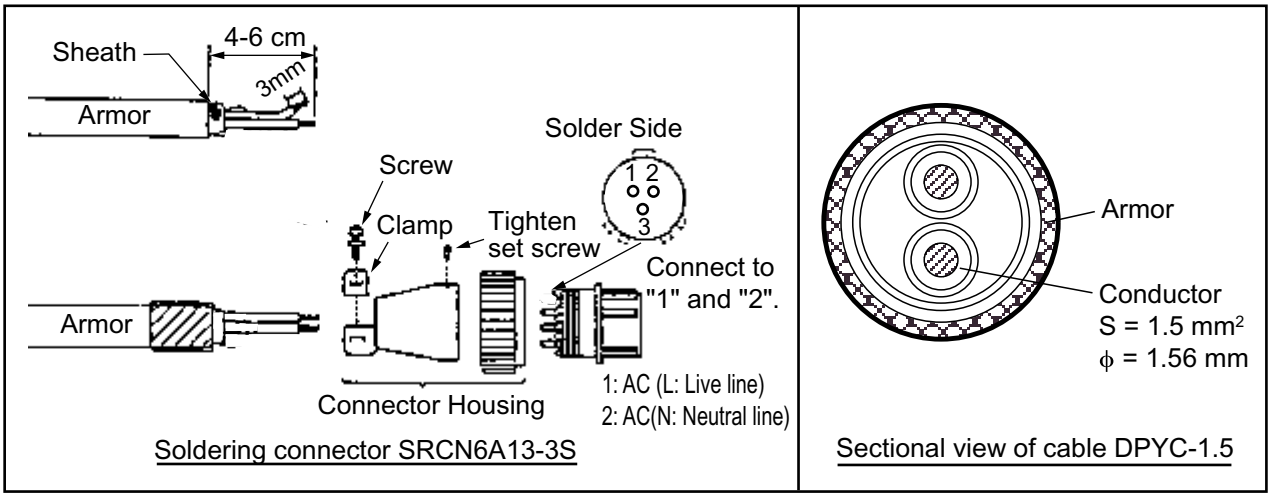
Using the cables designated below (or equivalent) to connect the FCV-1200 series or CH-250 makes their interface unit of the FCV-1200 series and CH-250 unnecessary. The mini D-SUB 15 P connector cannot be used to connect the FCV-1200 series and CH-250.



Display unit, rear view, wiring using specialty cables

Notes on wiring

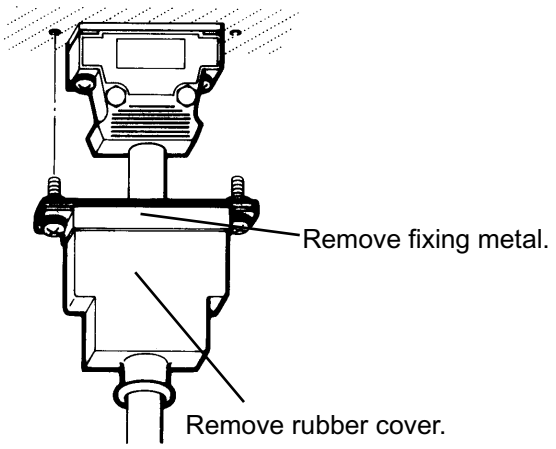
- For AC specification, solder connector SRCN6A13-3S (supplied in installation materials) to the power cable (DPYC-1.5 (Japan Industrial Standard) or equivalent).



How to solder connector SRCN6A13-3S; sectional view of cable DPYC-1.5

- The cover of the D-sub connector of the cable 06S4078 may be removed to pass the cable through tubing, bulkhead, etc. Use vinyl tape to bind connector wiring and rubber cover. This allows the cable to be passed through a hole having a diameter of 30 mm.

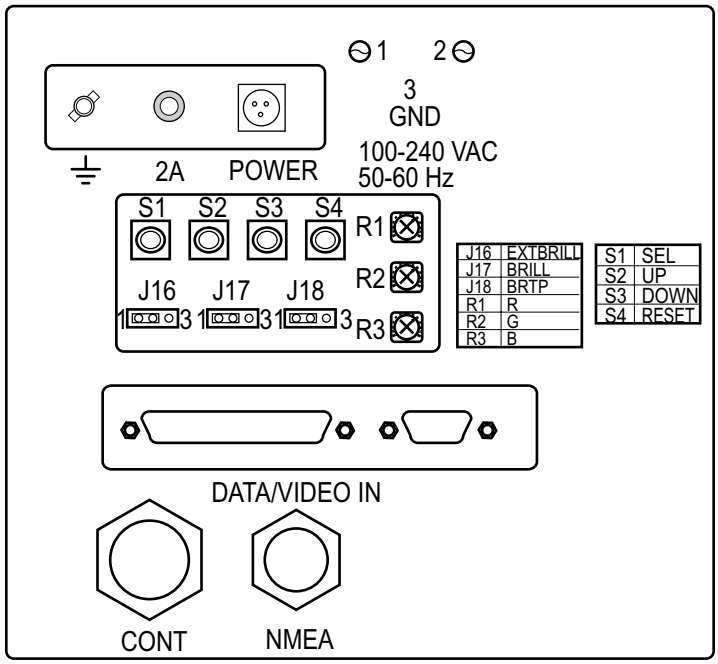
- Cable 06S4078 is of waterproof construction, however, the MU-150C is not waterproof (specification IPX0). Therefore, remove rubber cover and fixing metal from the display side of the cable.



D-sub connector

3 ADJUSTMENTS

Controls for adjustment of the picture are provided on the rear of the display unit. Open the small cover to access the controls.



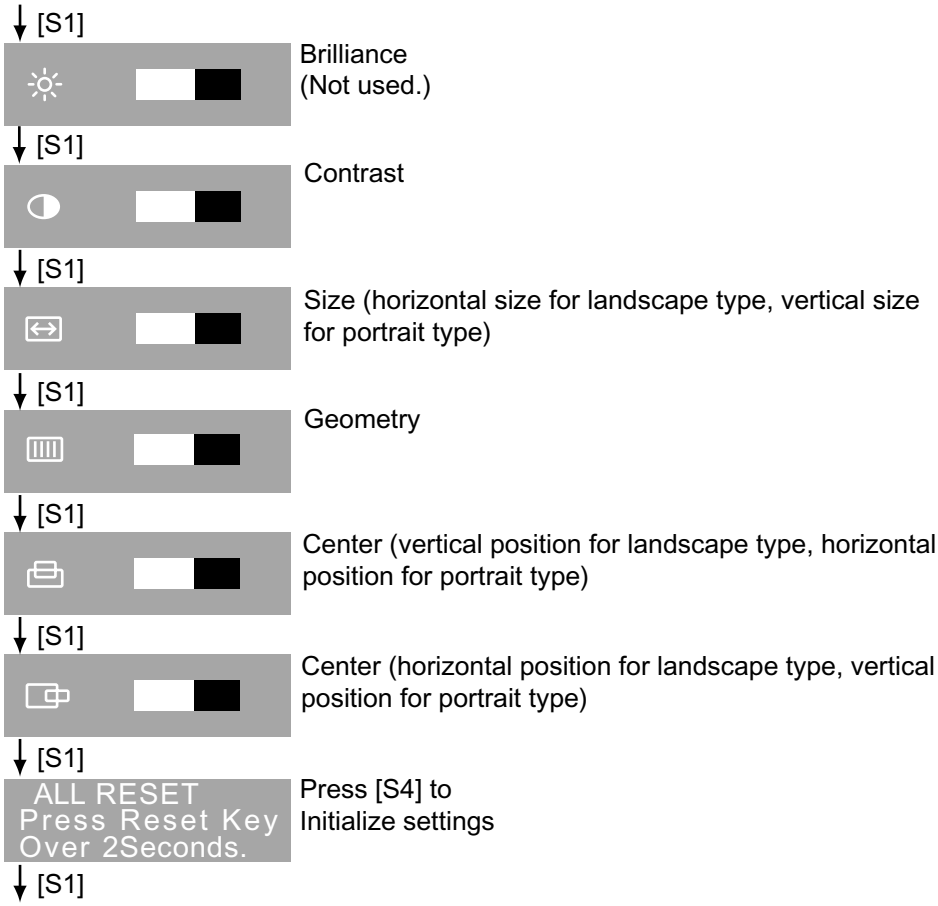
Rear panel (AC type)

3.1 Picture Adjustment

Contrast and picture are adjusted with

[S1]: Opens menu; selects menu items.
[S2]: Increases setting.
[S3]: Decreases setting.
[S4]: Initializes setting.

Note: Though “EXIT” is printed on the CONE Board (10P6877), the function of S4 switch is “RESET.”



About the picture adjustment buttons

- The [S2] and [S3] buttons may be pressed and held down to increase/decrease setting more rapidly.
- The [S4] button can initialize settings individually or all at once. Press it at after adjustment of a specific setting, or at the “ALL RESET” screen to initialize all picture adjustment settings.
- The adjustment display disappears if there is no adjustment within five seconds.

3.2 RGB Adjustment

Color may be adjusted with the following potentiometers. Turn the potentiometers clockwise to increase color.

Model	Potentiometer Setting
FCV-1200 Series, CH-250, FR-1760DS	Default setting
GD/GP-280/380/680, FCV-1500 Series, CH-37, CSH23/73/83, FR-1500 MK3 Series	Fully clockwise

R1: Red
R2: Green
R3: Blue

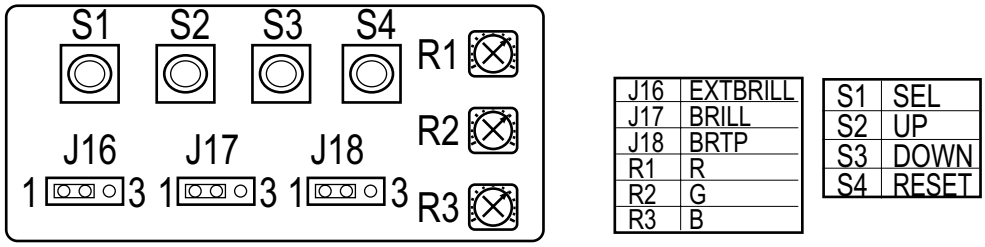
3.3 Brilliance Adjustment

Brilliance can be adjusted from the control unit of the FCV-1200 series or CH-250 by setting jumper block J17 as below.

J17: Brilliance control circuit selection

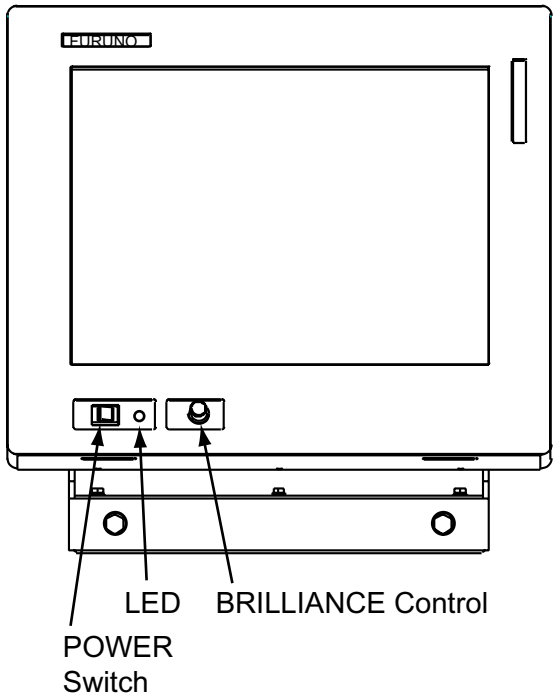
1-2: Brilliance is adjusted from the MU-150C (default setting)
2-3: Brilliance is adjusted from the control unit of the FCV-1200 series or CH-250

Note: Do not change the setting of the J16 or J18. The default setting for both is “1-2”.



Jumper blocks

4 OPERATION



Display unit

POWER switch: Turns the power on/off. The LED lamp lights in green when the unit is turned on and goes off when the unit is turned off.

To turn the MU-150C on and off from the control unit of a video sounder such as the FCV-1200 series, turn on the POWER switch of the MU-150C. Note that with the MU-150C turned on and the FCV-1200 turned off the LED on the MU-150C lights in red. This means that weak current is flowing to the MU-150C. To turn off the power completely, turn off the MU-150C.

BRILLIANCE control: Adjusts display brilliance. In some instances brilliance is controlled from the equipment connected (for example, FCV-1200 series).

LED: Shows display status:
Green: Display on
Red: Power save

5 MAINTENANCE, TROUBLESHOOTING

⚠ WARNING

ELECTRICAL SHOCK HAZARD
Do not open the equipment.

Only qualified personnel should work inside the equipment.

5.1 Maintenance

Routine maintenance

Regular maintenance is important for good performance. Check the following on a regular basis to keep the equipment in good operating condition.

- Check that the connectors at the rear of the display unit are tightly fastened.
- Check the ground wire and ground terminal for rust. Clean if necessary. Confirm that the ground wire is tightly fastened.
- Remove dust and dirt from the display unit and LCD with a dry, soft cloth. Do not use chemical cleaners to clean any part of the display unit – they can remove paint and markings.
- Wipe the LCD carefully o prevent scratching, using tissue paper and an LCD cleaner. To remove dirt or salt deposits, use an LCD cleaner, wiping slowly with tissue paper so as to dissolve the dirt or salt. Change paper frequently so the salt or dirt will not scratch the LCD. Do not use solvents such as thinner, acetone or benzene for cleaning.

Fuse replacement

The 1.5 A 250 V fuse (AC type) or 3A 125V fuse (DC type) on the rear panel protects the equipment from internal fault and overcurrent. If the fuse blows, find the cause before replacing it. If the fuse blows again after replacement, request service.

⚠ WARNING

Use the proper fuse.

Use of a wrong fuse can cause fire or damage to the equipment.

5.2 Troubleshooting

The table below provides troubleshooting procedures to use when no picture appears. If you cannot restore the picture, do not attempt to check inside the equipment – there are no user serviceable parts inside. Refer any work to a qualified technician.

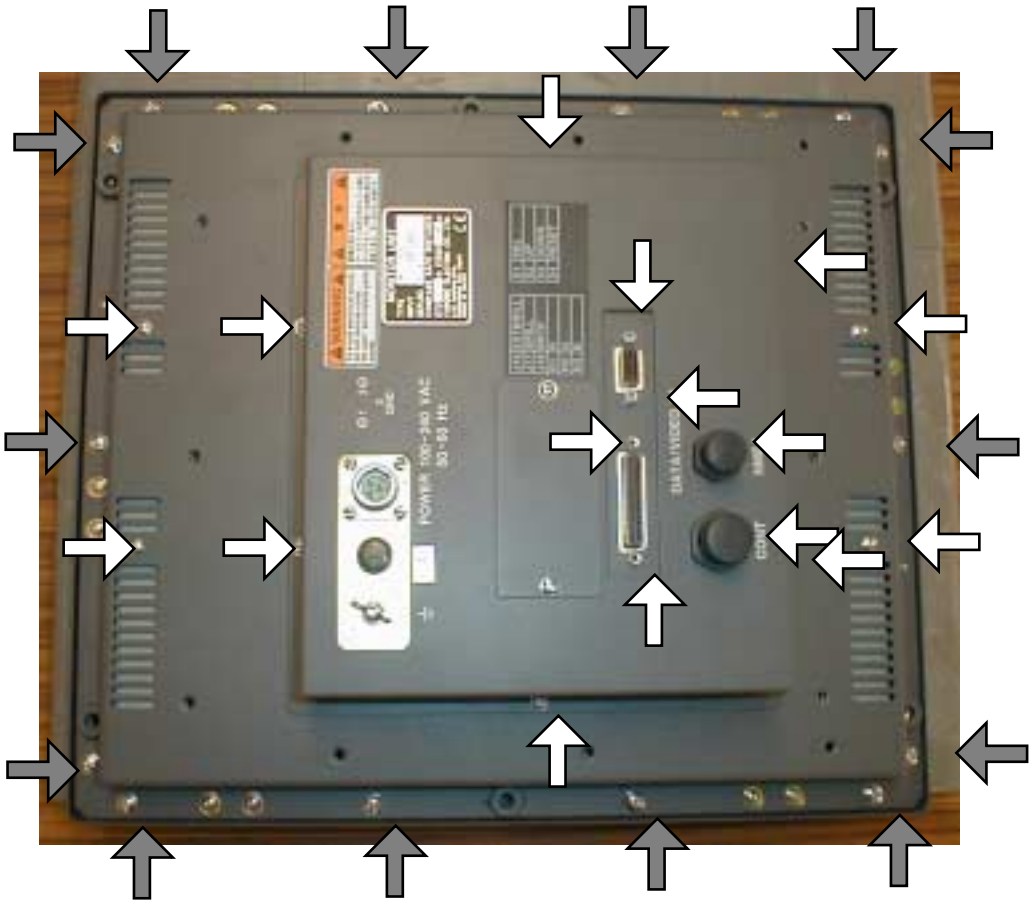
Troubleshooting table

Reason for no picture	Remedy
Battery voltage too high.	Check battery voltage.
Fuse has blown.	Replace fuse.
Cable between MU-150C and external equipment has loosened.	Refasten cable.
Power cable has loosened.	Refasten cable.

APPENDIX
Modification for Switching from Landscape to Portrait Orientation

To use the MU-150C for portrait with the CH-37, FCV-1200 series, FCV-1500 series or FR-1760DS, the LCD assembly must be turned 180°.

1. Place the display unit on a workbench with the LCD side down. It is recommended to place the unit on cushioning material so as not to place pressure on knob.
2. Unfasten the items marked with white arrows in the figure below to remove the cover for the power section and connectors: 10 screws, four spacers for connectors and two nuts of waterproof connectors. This gives access to the CONE Board (10P6877) and power assy.

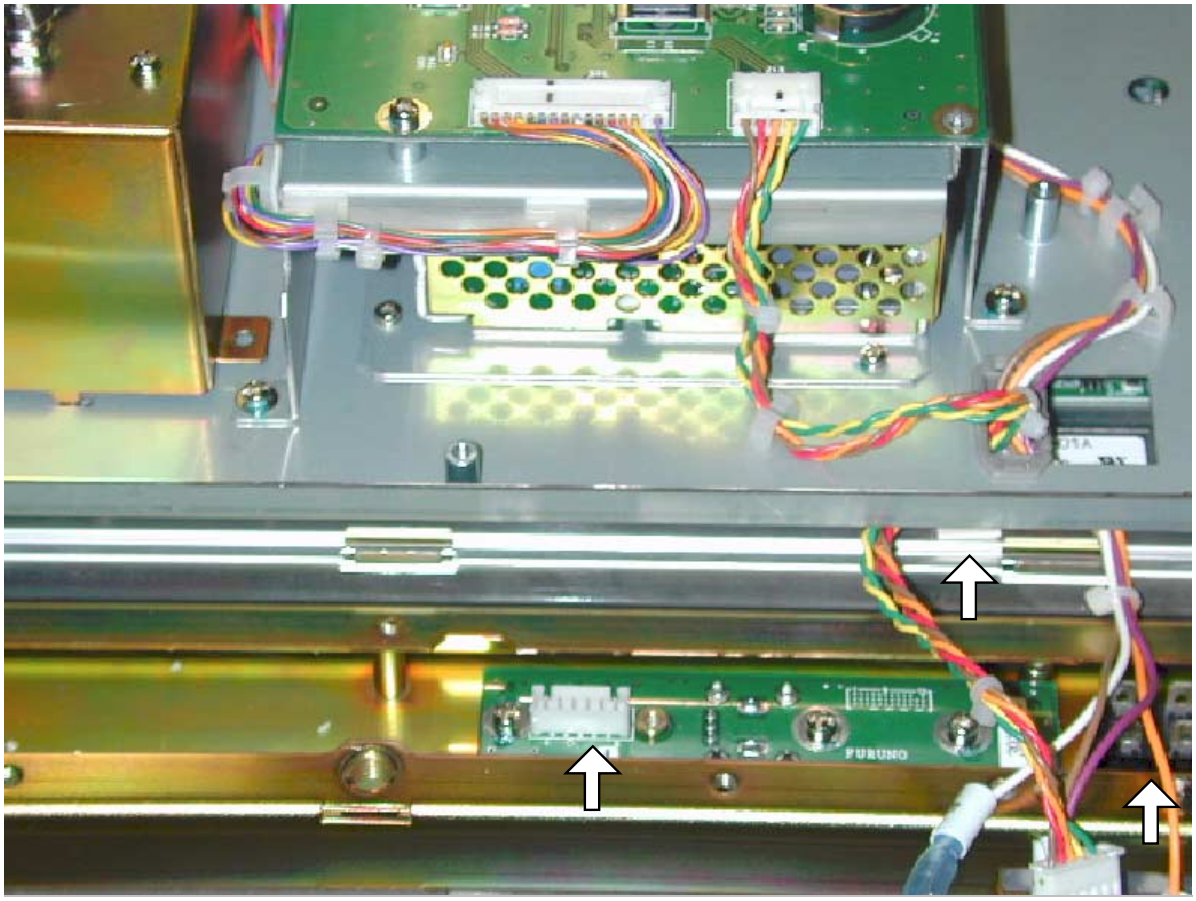


Display unit, rear view

3. Remove the 14 screws marked with gray arrows in the figure above.

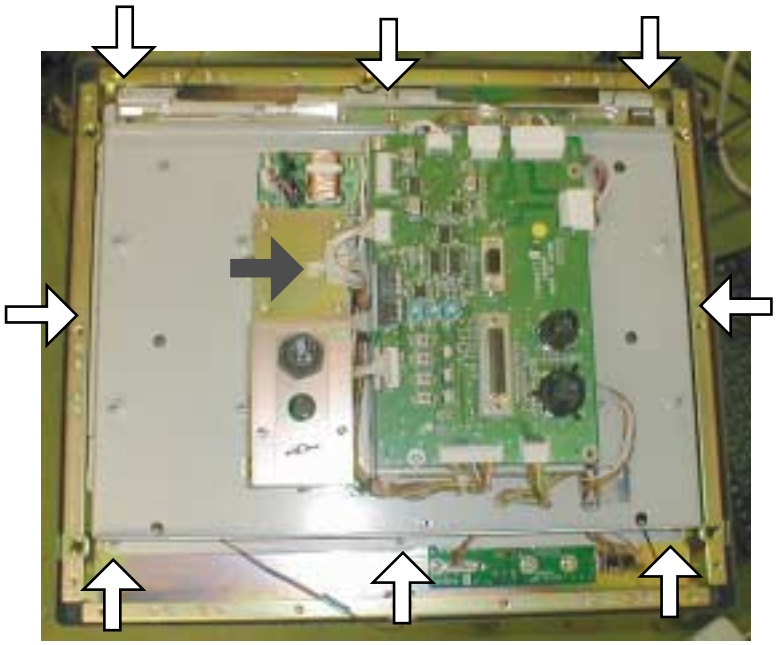
4. Referring to the arrows in the figure below for location, disconnect the connector and four power switch tag terminals and release cable from CK clamp.

   Note: When disconnecting the tag terminals, pull them by the metal part of the terminal. Do not disconnect by pulling the cable – cables may become separated from the terminal.



Power assy.

5. Unfasten the eight screws marked with the arrows in the figure below.



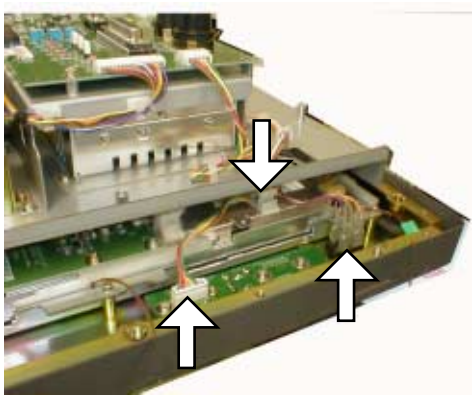
Display unit, rear view

6. Release the cable from the clamp marked with the gray arrow in the figure above.
7. Turn the LCD assembly 180°.

Display unit, rear view

8. Fasten screws unfastened at step 5. (Torque: 0.39 ±0.04 Nm; 4 ±0.4 kgm)
9. Turn the power chassis 180° counterclockwise, making sure no load is placed on the cable at the center of the power chassis when turning. When reassembling the display unit to “landscape,” turn the power chassis 180° clockwise. The tape for fixing the cable from the LCD may peel off if the power chassis is turned twice or more in the same direction.
10. Fasten the cable with the clamp marked with the gray arrow in step 6.

11. Fasten cables with the clamps marked with the white arrows in the figure below. Connect the power connector to J1 on the pcb 10P3879 as follows: 1, Brown; 3, Orange; 4, Purple, 6, White.



Location of power switch and pcb 10P3879

12. Fix the rear cover with 14 screws (M4 x 8). (Torque 1.47 ±0.15 Nm; 15 ±1.5 kgm)
13. Temporarily fasten the cover for the power section and connectors with 10 screws (M3 x 8).
14. Fix four spacers for connectors. (Torque: 0.39 ±0.04 Nm; 4 ±0.4 kgm)
15. Temporarily fasten the cover for the power section and connectors with six screws (M3 x 8). (Torque: 0.78 ±0.08 Nm; 8 ±0.8 kgm)
16. Fasten two waterproofing nuts. (Torque: 0.76 ±0.02 Nm; 7.8 ±0.2 kgm)
17. Fasten the cover near the power section and connectors with remaining four screws. (Torque: 0.78 ±0.08 Nm; 8 ±0.8 kgm)
18. Attach the FURUNO logo (supplied) at the cavity in the upper left corner of the display unit.

SPECIFICATIONS OF MULTI-PURPOSE LCD DISPLAY
MU-150C

1 GENERAL

1.1	Display	15.0 inch color LCD, 304.1 x 228.1 mm
1.2	Brightness	180 cd/m^2 typical, 150 cd/m^2 minimum
1.3	Resolution	VGA (640 x 480), XGA (1024 x 768)
1.4	Viewing Angle	160° (left/right: 80°, up/down: 80°)
1.5	Input Signal	RGB: 0.7 Vp-p to 3.0 Vp-p, Synchronization: TTL level

2 POWER SUPPLY

2.1	Rated Voltage	100-240 VAC: 0.7-0.4 A, 1 phase, 50-60 Hz
		24 VDC, 1.4 A

3 ENVIRONMENTAL CONDITION

3.1	Ambient Temperature	Operation: 0°C to +50°C, Storage: -20°C to +60°C
3.2	Relative Humidity	95% at 40°C
3.3	Waterproofing	IPX0
3.4	Vibration	IEC 60945

4 COATING COLOR

4.1	Main Unit	N3.0

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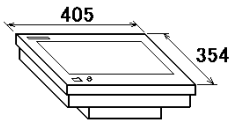
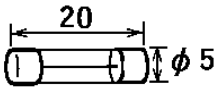
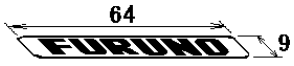
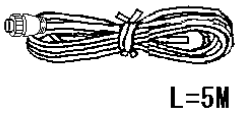
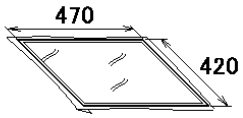
PACKING LIST

10CQ-X-9851 -5 1/1

MU-150C-H-DC-CS

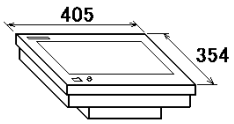
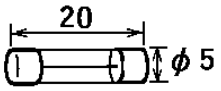
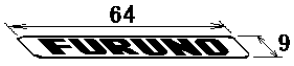
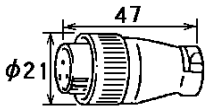
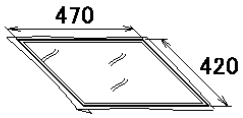
NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
15型ｶﾗｰLCD表示器 MULTI-PURPOSE LCD DISPLAY		MU-150C-H-DC 000-012-618	1
予備品 SPARE PARTS		**SP10-02801**	
ﾋｭｰｽﾞ FUSE		FGMB 3A 125V 000-104-909	2
付属品 ACCESSORIES		**FP10-02501**	
ﾛｺﾞｼｰﾄ LOGO SEAL		10-075-1052-0 100-294-900	1
工事材料 INSTALLATION MATERIALS		**CP10-04902**	
ｹｰﾌﾞﾙ組品MJ CABLE ASSY.		MJ-A3SPF0020-050Z 000-145-882	1
その他工材 OTHER INSTALLATION MATERIALS			
装備用型紙 TEMPLATE		10-075-1071-2 100-294-942	1

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

PACKING LIST

10CQ-X-9855 -1 1/1

MU-150C-H-AC-CS

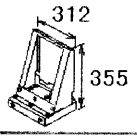
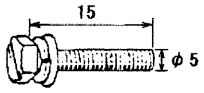
NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
15型ｶﾗｰLCD表示器 MULTI-PURPOSE LCD DISPLAY		MU-150C-H-AC 000-012-617	1
予備品 SPARE PARTS		**SP10-02802**	
ﾋｭｰｽﾞ FUSE		FGMB 1.5A 250V 000-145-654	2
付属品 ACCESSORIES		**FP10-02501**	
ﾛｺﾞｼｰﾄ LOGO SEAL		10-075-1052-0 100-294-900	1
工事材料 INSTALLATION MATERIALS		**CP10-04901**	
ｺﾈｸﾀ(SRCN) CONNECTOR		SRCN6A13-3S 000-508-665	1
その他工材 OTHER INSTALLATION MATERIALS			
装備用型紙 TEMPLATE		10-075-1071-2 100-294-942	1

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

PACKING LIST

10CQ-X-9854 -0 1/1

MU-150C BRACKET

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
ﾌﾞﾗｹｯﾄ組品 BRACKET(1) ASSY.		FP10-02511 001-414-520	1
付属品 ACCESSORIES		FP10-02512	
六角ｾﾑｽB ｽﾘﾜﾘ HEX. BOLT (SLOTTED, WASHER HEAD)		M5X15 SUS304 000-882-055	6

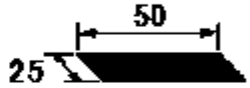
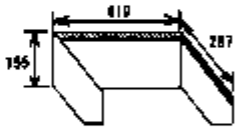
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

C2025-Z04-A

PACKING LIST

10CO-X-9852 -0 1/1

MU-150C

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
付属品 ACCESSORIES		FP10-02502	
ﾌｧｽﾅｰ HOOK LOOP FASTENER		10-075-1093-0 100-296-870	9
ﾌｰﾄﾞ(ﾖｺ) FOOD		10-075-1091-0 100-294-990	1

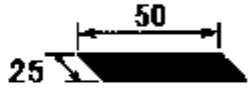
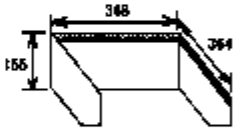
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

C2025-Z02-A

PACKING LIST

10CO-X-9853 -0 1/1

MU-150C

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
付属品 ACCESSORIES		FP10-02503	
ファスナー HOOK LOOP FASTENER		10-075-1093-0 100-296-870	9
フード(タテ) FOOD		10-075-1092-0 100-295-000	1

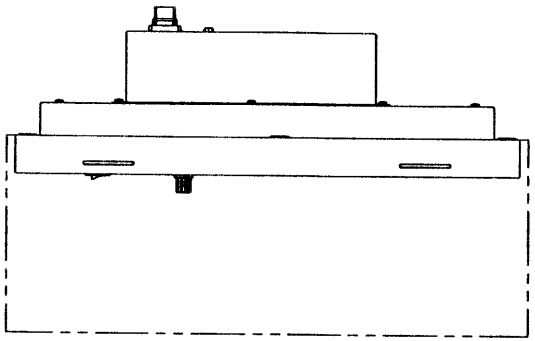
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

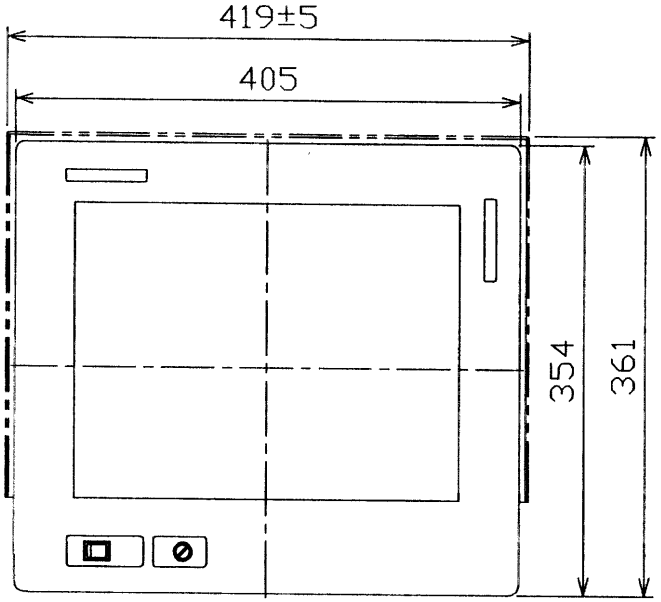
C2025-Z03- A

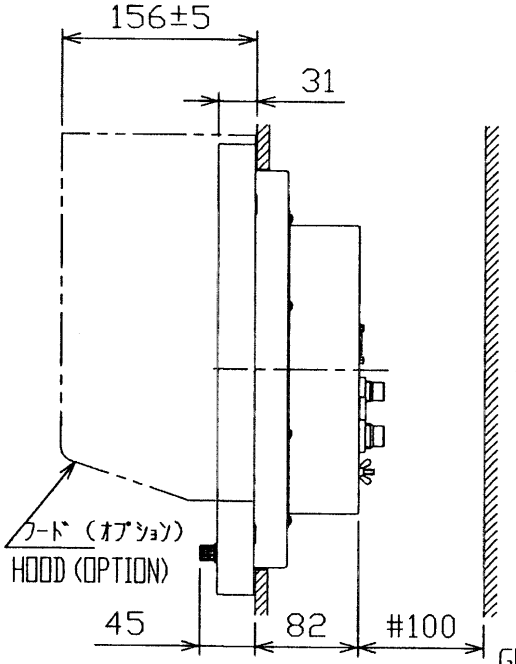
FURUNO

寸法区分（mm） DIMENSION	公差（mm） TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3

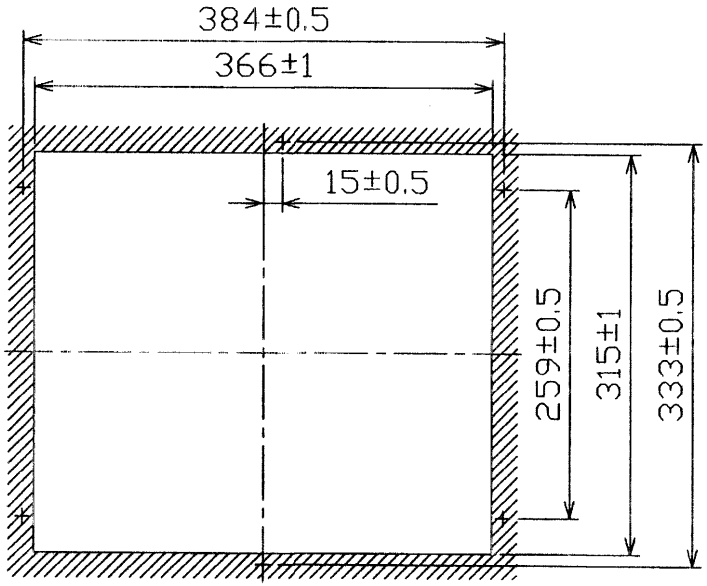
表1 TABLE 1

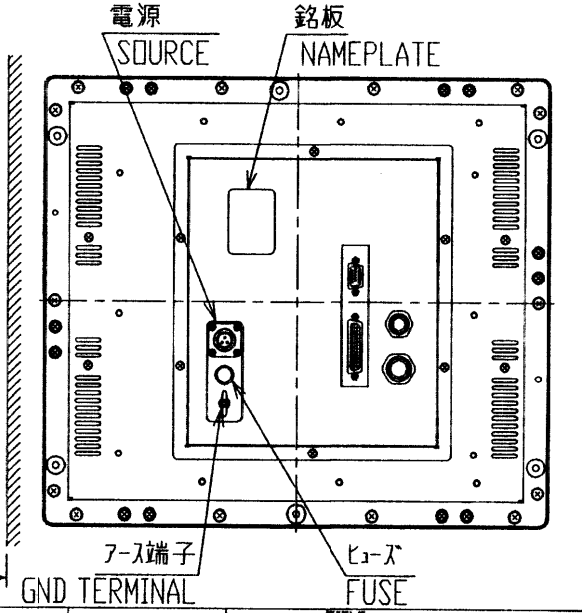






取付穴寸法図(表側)
CUTOUT DIMENSIONS
(FRONT SIDE)





注 記 1）#印寸法は最小サービス空間寸法とする。
2）指定外の寸法公差は表1による。
3）取付用ネジはM5×30トラスタッピンネジを使用のこと。

NOTE 1. #: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
3. USE M5x30 TAPPING SCREWS FOR FIXING THE UNIT.

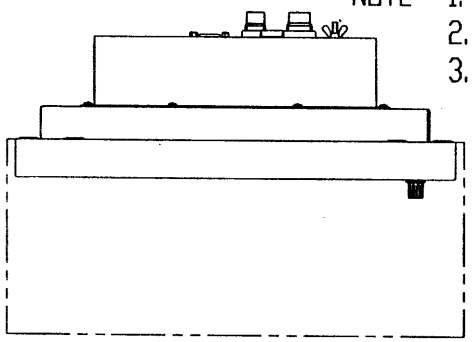
DRAWN Sep. 6 '01 T.YAMASAKI		TITLE MU-150C
CHECKED		名称 表示器（横型、埋込装備）
APPROVED		外寸図
SCALE 1/6 MASS 1.0 ±10% kg		NAME MONITOR UNIT (LANDSCAPE TYPE, FLUSH MOUNT)
DWG No. C2025-G03-B	10-075-1006-0	OUTLINE DRAWING

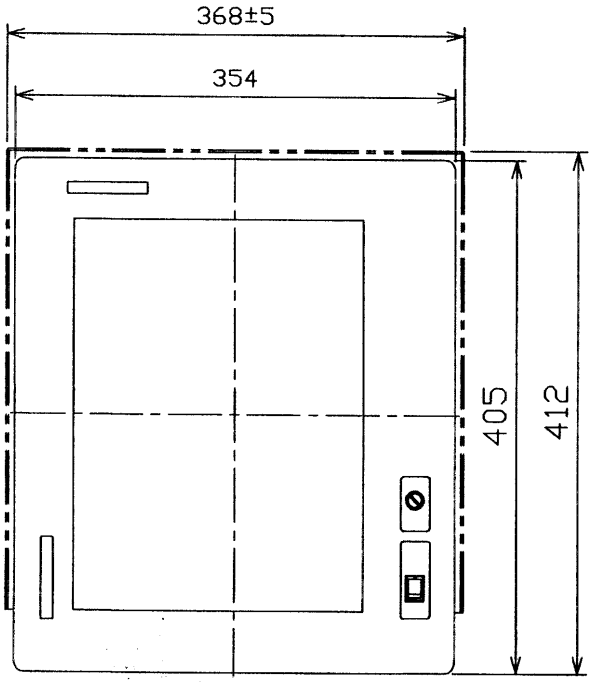
FURUNO ELECTRIC CO., LTD.

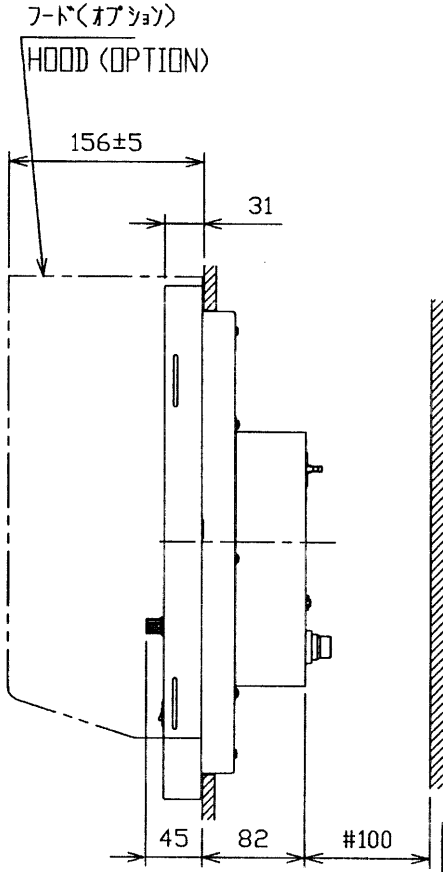
FURUNO

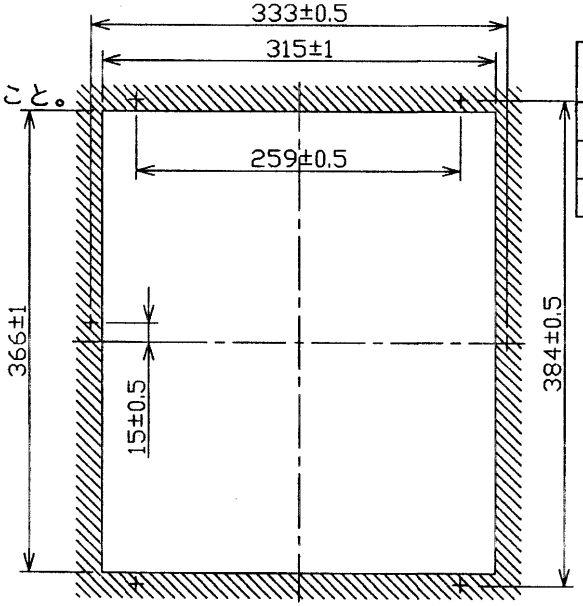
注　記　1）＃印寸法は最小サービス空間寸法とする。
　　2）指定外の寸法公差は表１による。
　　3）取付用ネジはＭ５×３０トラスタッピンネジを使用のこと。

NOTE　1. #: RECOMMENDED SERVICE CLEARANCE.
　　2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
　　3. USE M5x30 TAPPING SCREWS FOR FIXING THE UNIT.





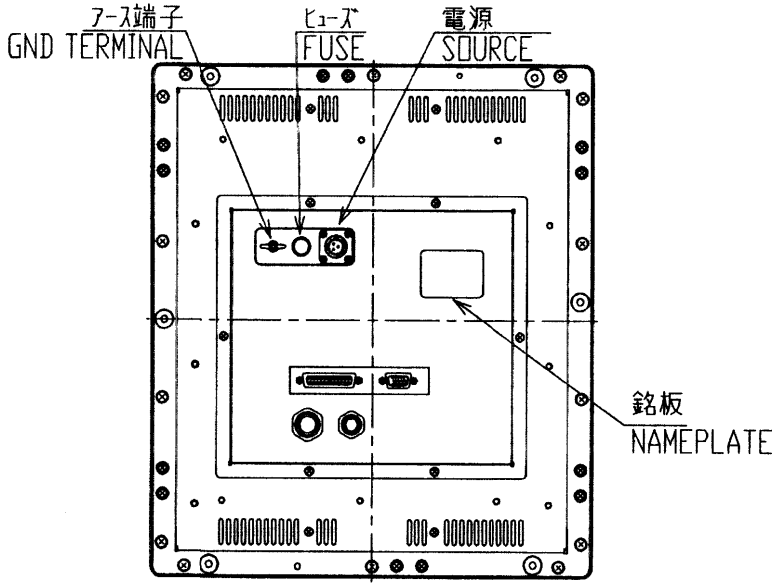




寸法区分（ｍｍ） DIMENSION	公差（ｍｍ） TOLERANCE
L≦50	±1．5
50<L≦100	±2．5
100<L≦500	±3

表１　TABLE 1

取付穴寸法図（表側）
CUTOUT DIMENSIONS (FRONT SIDE)



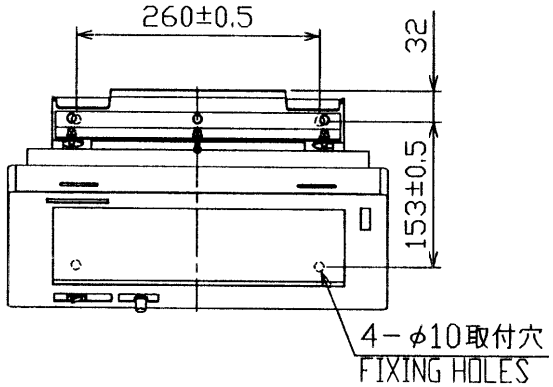
DRAWN Dec. 26 '01 T.YAMASAKI			TITLE MU-150C
CHECKED Dec 26 '01 T.K.			名称 表示器（縦型、埋込装備）
APPROVED Dec 26 '01 T.K.			外寸図
SCALE 1/6	MASS 1.0 ±10% kg		NAME MONITOR UNIT (PORTRAIT TYPE, FLUSH MOUNT)
DWG No. C2025-G04-B		10-075-1016-1	OUTLINE DRAWING

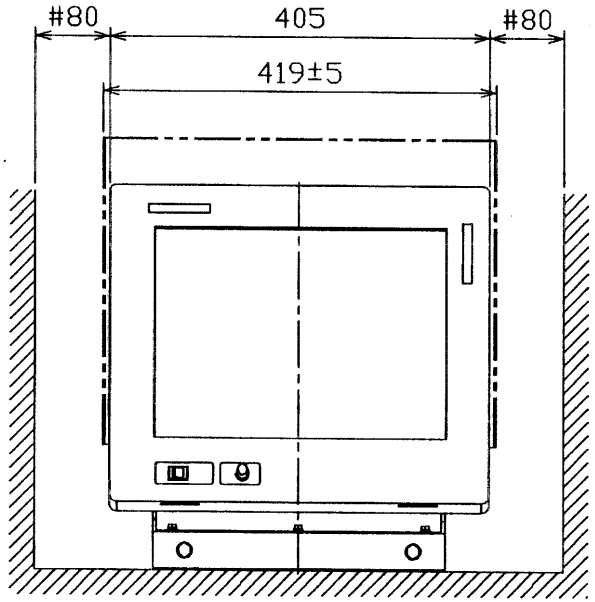
FURUNO ELECTRIC CO., LTD.

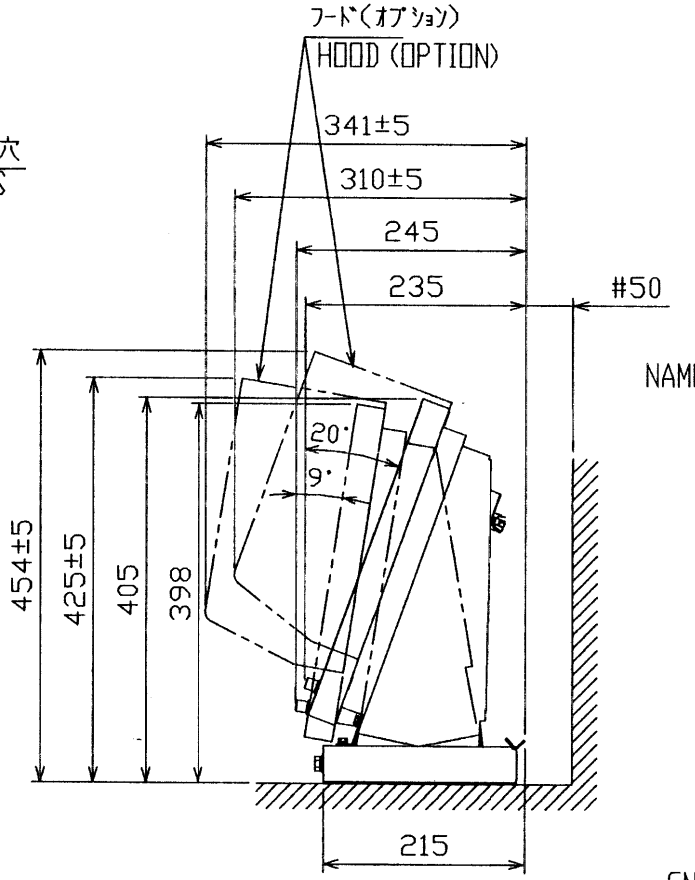
FURUNO

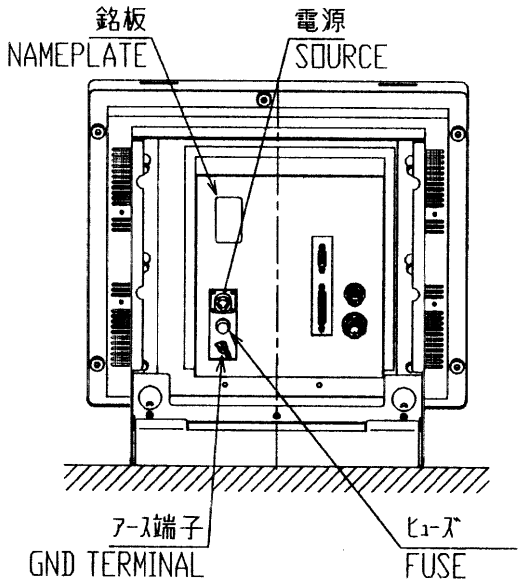
寸法区分（mm） DIMENSION	公差（mm） TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3

表1 TABLE 1









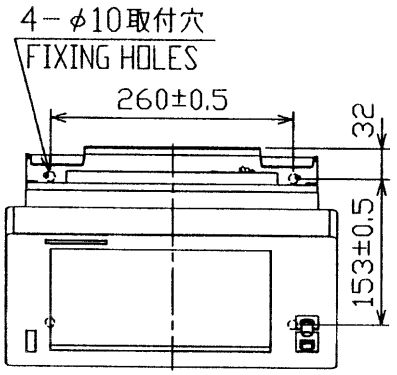
注 記 1）#印寸法は最小サービス空間寸法とする。
2）指定外の寸法公差は表1による。
3）取付用ネジはM8ボルトまたはコーチボルト呼び径8を使用のこと。

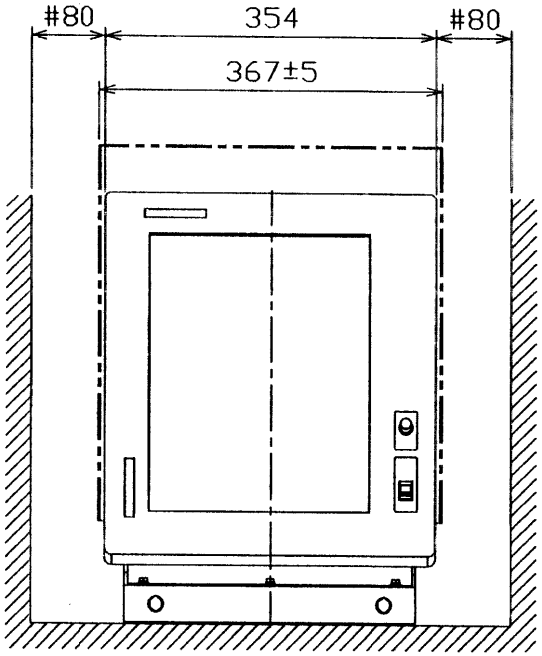
NOTE 1. #: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
3. USE M8 BOLTS OR COACH SCREWS φ8 FOR FIXING THE UNIT.

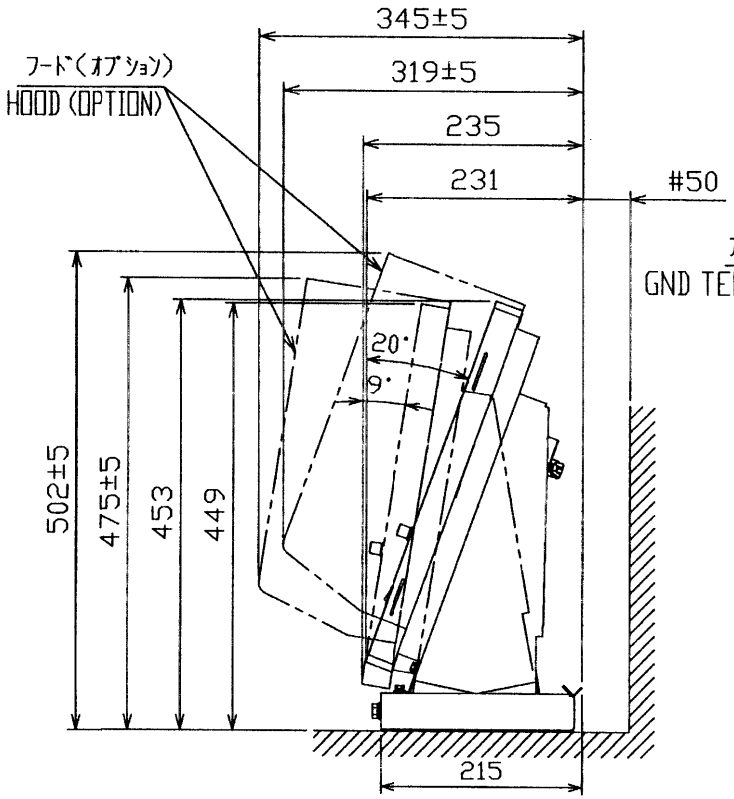
DRAWN Sep. 6 '01 I.YAMASAKI			TITLE MU-150C
CHECKED Sep 7 '01			名称 表示器（横型）
APPROVED Sep 7 '01			外寸図
SCALE 1/8 MASS 1.6 ±10% kg			NAME MONITOR UNIT (LANDSCAPE TYPE)
DWG No. C2025-G02-B	10-075-102G-0		OUTLINE DRAWING

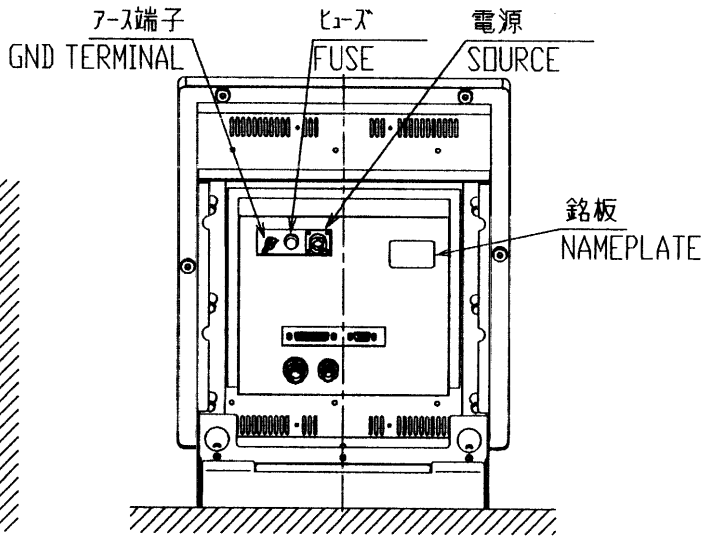
FURUNO ELECTRIC CO., LTD.

FURUNO









寸法区分（mm） DIMENSION	公差（mm） TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3

表1 TABLE 1

注 記 1） #印寸法は最小サービス空間寸法とする。
2） 指定外の寸法公差は表1による。
3） 取付用ネジはM8ボルトまたはコーチボルト呼び径8を使用のこと。

NOTE 1. #: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
3. USE M8 BOLTS OR COACH SCREWS φ8 FOR FIXING THE UNIT.

DRAWN Sep.6.'01 T.YAMASAKI			TITLE MU-150C
CHECKED Sep 7'01 Y.K.			名称 表示器（縦型）
APPROVED Sep 7'01 Y.K.			外寸図
SCALE 1/8 MASS 16 ±10% kg			NAME MONITOR UNIT (PORTRAIT TYPE)
DWG No. C2025-G01-B	10-075-103G-0		OUTLINE DRAWING

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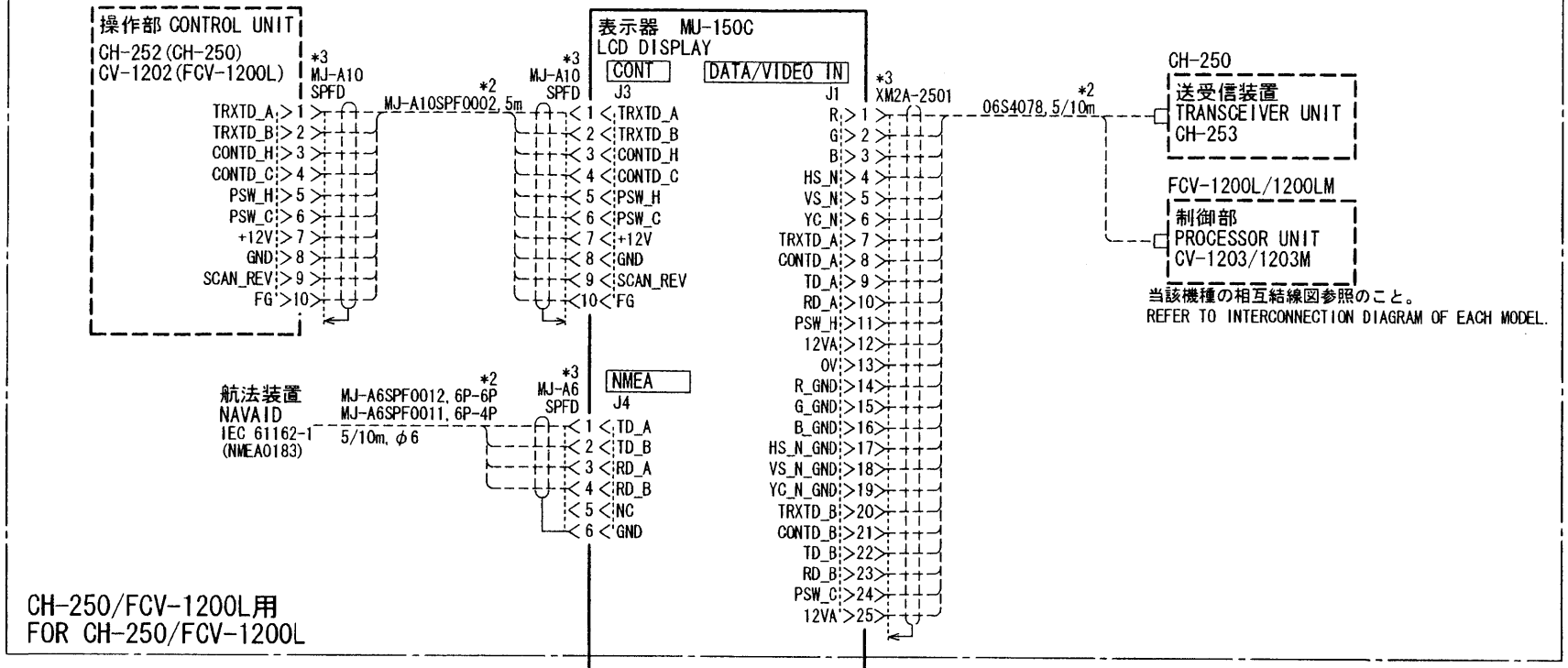

注記
＊1）現地手配。
＊2）オプション。
＊3）工場にて取付済み

NOTE
*1. LOCAL SUPPLY.
*2. OPTION.
*3. FITTED AT FACTORY.

DRAWN Mar. 26 '02 T. YAMASAKI		TITLE	MU-150C
CHECKED Mar 26 '02 Y. K.		名称	15型カラーLCD表示器
APPROVED Mar 26 '02 Y. K.			相互結線図
		NAME	MULTI-PURPOSE LCD DISPLAY
DWG. No. C2025-C01- D			INTERCONNECTION DIAGRAM

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FURUNO ELECTRIC CO., LTD.

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